www.zcsazzurro.com



QUICK INSTALLATION GUIDE

INVERTER 1PH 3000TLM-6000TLM-V3

1PH 3000TLM-V3 • 3680TLM-V3 • 4000TLM-V3
4600TLM-V3 • 5000TLM-V3 • 6000TLM-V3

Wear the personal protective equipment required for the task.	Always consult the user manual.	General warning Important safety information.

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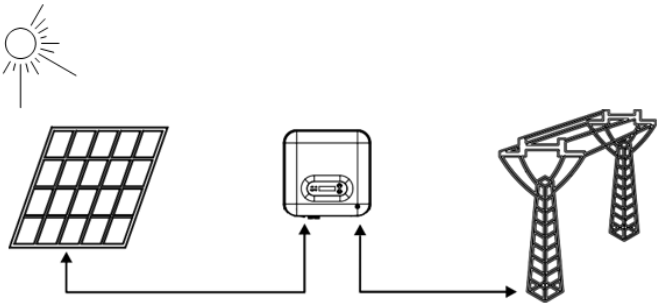
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Before you start

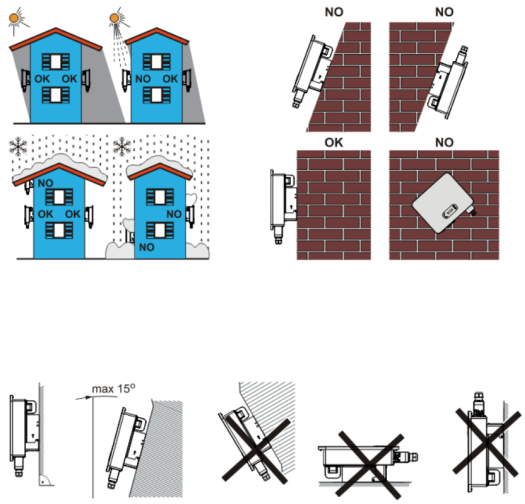
WARNING Work is restricted to qualified personnel. Before making connections, isolate AC and DC, prevent reconnection and verify absence of voltage. Wait at least 5 minutes after isolation.

Illuminated modules generate voltage even when the disconnector is open. Do not connect or disconnect PV connectors under load. Do not open the inverter enclosure.



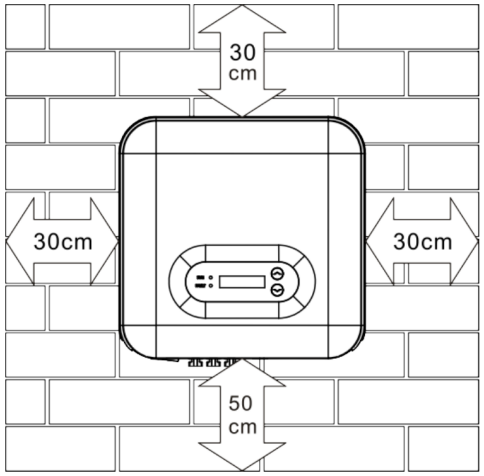
1 Installation and clearances

ENVIRONMENT AND POSITION



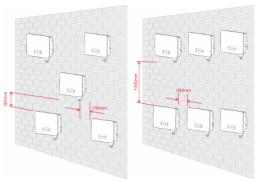
Vertical or tilted backwards up to 15°

SINGLE INVERTER



30 cm above and at sides
50 cm below

MULTIPLE INVERTERS



Staggered

300 mm vertical • 100 mm horizontal

Aligned

1000 mm vertical • 200 mm horizontal

1 Choose a load-bearing wall, a ventilated environment and an accessible location.

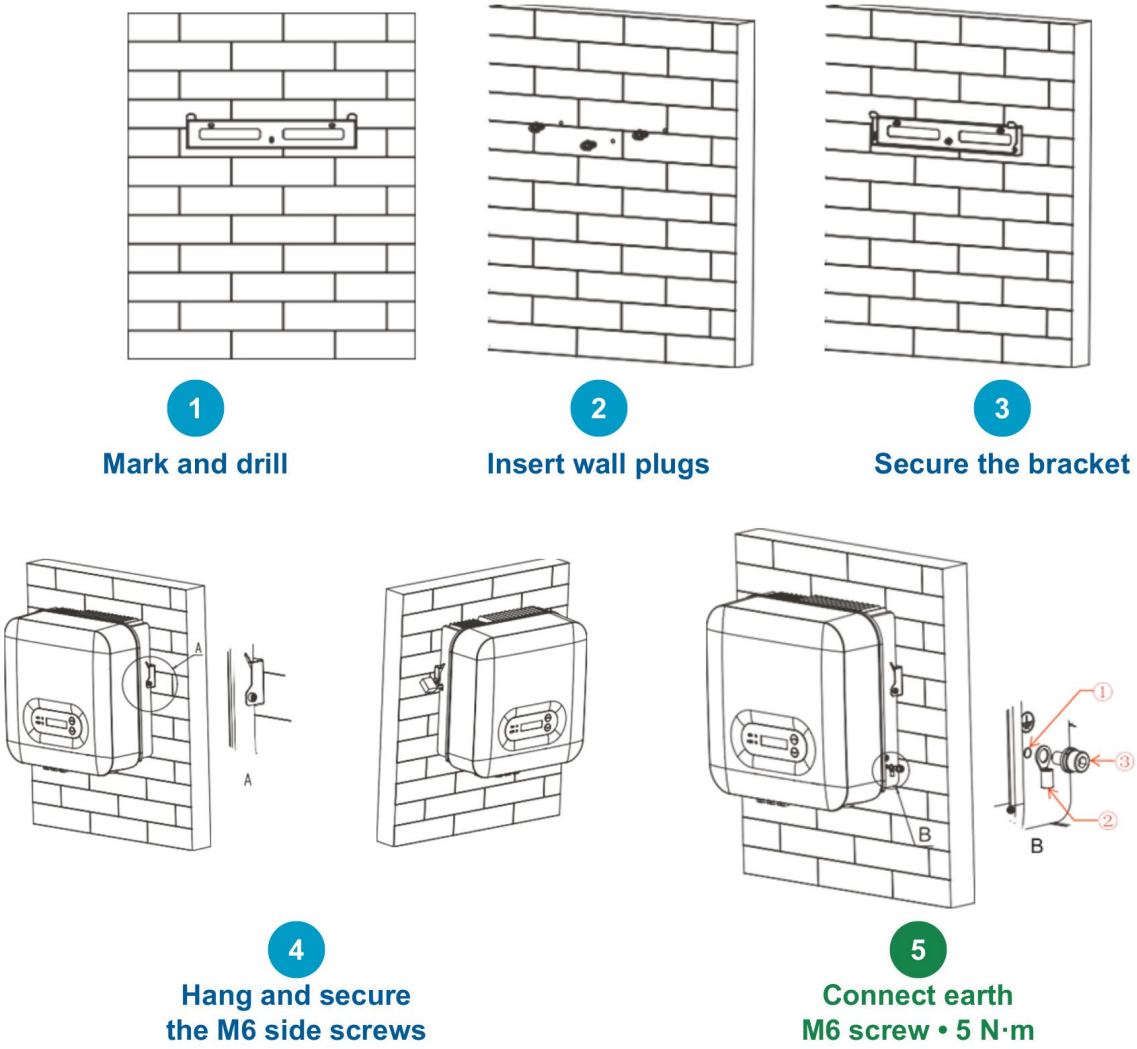
2 Avoid direct sunlight and rain, snow accumulation and flammable materials.

WARNING Do not install the inverter tilted forwards, horizontally or upside down. Keep the heat sink clear.

Note: For safety reasons, Zucchetti Centro Sistemi Spa and/or its partners may not carry out any technical repairs or maintenance work, or move the inverter from and to the ground if it is installed at a height of more than 180 cm from the ground.

Inverters installed at higher heights must be moved to the ground before they can be repaired or serviced.

2 Wall mounting



1 Secure the bracket using fixings suitable for the wall; check that it is level and stable.

2 Handle the inverter with two people. Do not support it by its terminals.

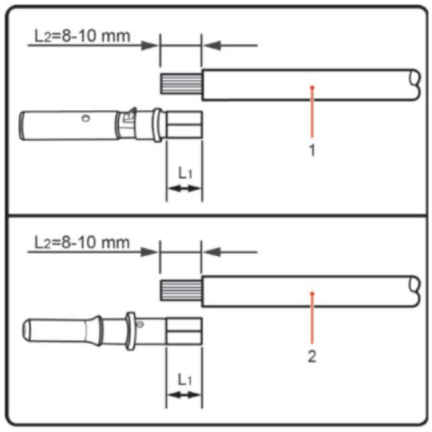
3 Connect the OT earthing lug using a yellow-green conductor; recommended cross-section greater than 4 mm^2, to be checked against the design.

WARNING Earth exposed conductive parts and metal parts requiring protection. Do not earth PV+ or PV–.

3 PV connection

Connector preparation

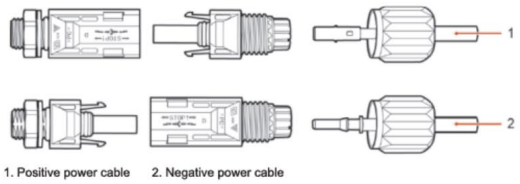
1 PREPARATION



1. Positive power cable 2. Negative power cable

Strip 8–10 mm

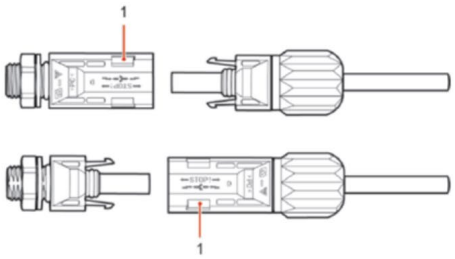
2 CRIMPING



1. Positive power cable 2. Negative power cable

+ contact on + cable
− contact on − cable

3 INSERT UNTIL IT CLICKS



PV CABLES

4–6 mm²
Ø 4,5–7,8 mm

Check sealing and polarity

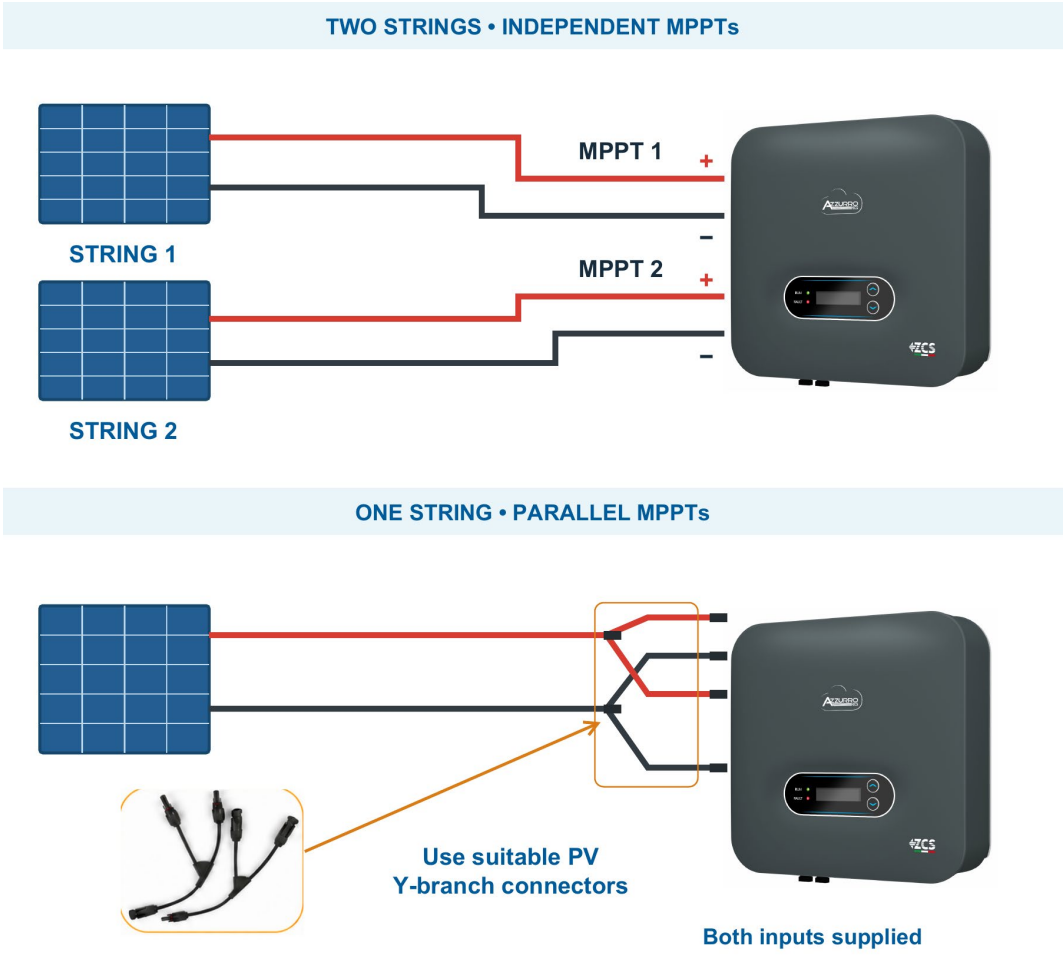
1 Slide on the cable glands, strip and crimp the conductors, then insert the contacts until they click into place.

2 Tighten the cable glands and check conductor retention.

WARNING AC and DC switches must remain open during wiring. Check polarity and voltage before mating the connectors.

PV connection

Input configuration



Electrical limit	Value
Maximum DC voltage / MPPT range	600 V / 80–550 V
Maximum / short-circuit current per MPPT	15 A / 22,5 A

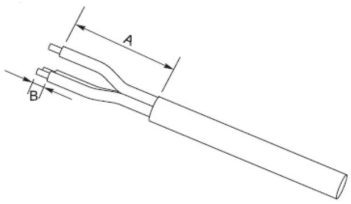
1 Both MPPT inputs must be used, even with a single PV string. In “Enter Setting > Set Input mode”, select the mode matching the wiring.

WARNING Open-circuit voltage at the minimum design temperature must not exceed 600 V. Connect PV generators only.

Modules connected in series within a string must have the same make, model, orientation and inclination. With two independent strings, this uniformity is required within each string. Check the power limits of the installed model.

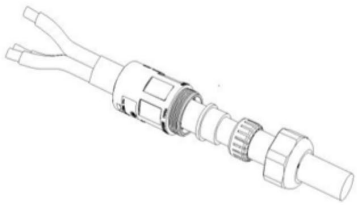
4 AC connection

1 PREPARE THE CABLE

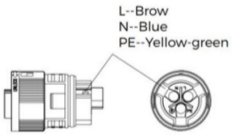


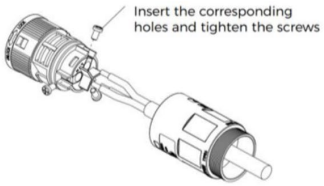
A 15–25 mm B 6–8 mm

2 ASSEMBLE THE CONNECTOR



3 CONNECT THE TERMINALS



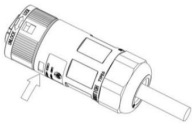


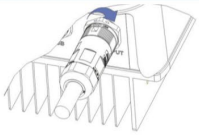
PE yellow-green

L brown

N blue

4 INSERT AND TIGHTEN





TLM-V3 model	3000	3680	4000	4600	5000	6000
Maximum cross-section in the AC connector	6 mm^2	6 mm^2	6 mm^2	6 mm^2	6 mm^2	6 mm^2
Recommended circuit breaker	20A	25A	25A	32 A	32 A	32 A

1 Size the copper cable and protective devices according to the design, within the connector's permitted range.

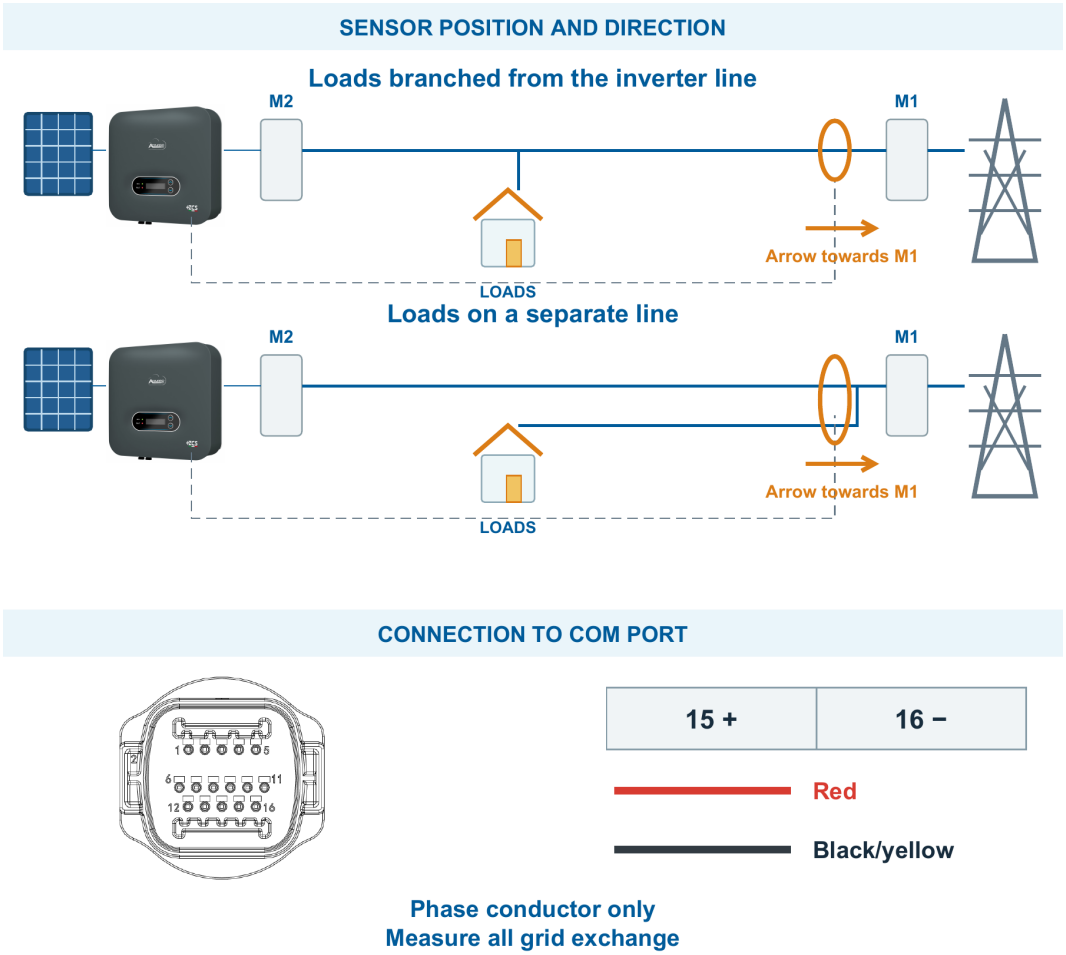
2 Tighten the terminals and cable gland to the connector specifications. Check fastening and sealing.

WARNING The AC circuit must be isolated and de-energised. Use a dedicated circuit breaker for each inverter; no loads between inverter and circuit breaker.

For RCD selection, consult the "Declaration for the use of RCD devices" at www.zcsazzurro.com, in the model's "Datasheets and manuals" section.

5 Zero export using a current sensor

Single-inverter configuration with ZCS CT



1 Install the CT on the phase conductor at the grid exchange point, with its arrow towards M1. Red: COM 15 (+); black/yellow: COM 16 (−).

2 «Enter Setting > PCC Select > 0001 > PCC CT».

3 “Set AntiReflux P > 0001 > Reflux Enable > 0.0 kW”. Confirm and restart.

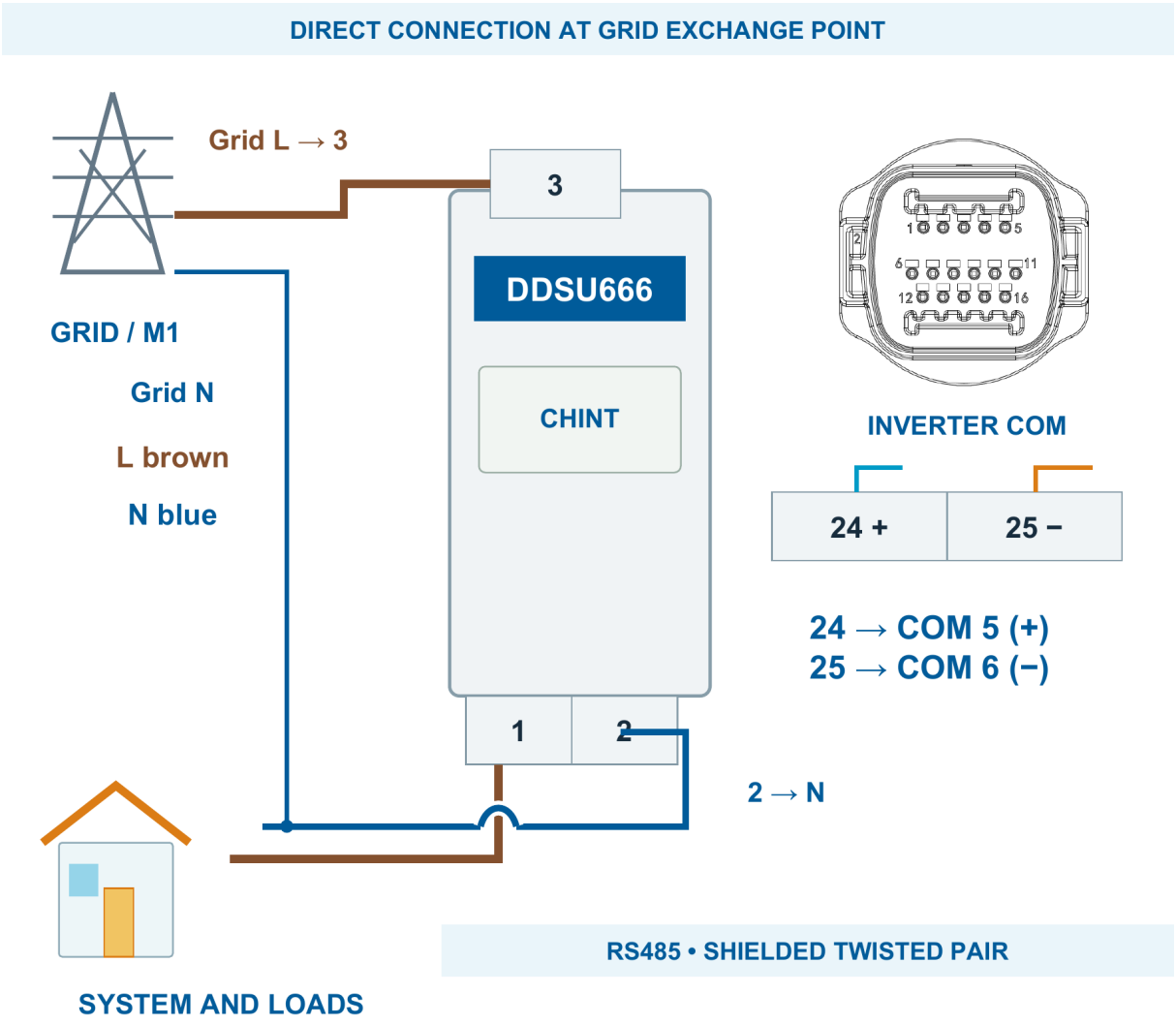
WARNING The CT must measure all grid exchange flows. For an extension, use a shielded twisted pair (FTP/STP), with the shield earthed at one end only.

Use the CT for distances up to 50 metres between CT and inverter. For longer runs, use the CHINT DDSU666 meter.

TEST: With sufficient PV power, switch on loads > 1 kW and check that generation follows them. Reduce the loads: generation must fall to approximately zero with no loads.

6 Zero export using a CHINT DDSU meter

Direct-connected ZCS DDSU666 and single inverter



1 Place the meter at the overall grid exchange point. Connect PIN 3 to the phase leaving the grid operator's meter, PIN 1 to the system phase and 2 to the system neutral.

2 Connect RS485: meter 24 → COM 5 (+); meter 25 → COM 6 (−).

WARNING Connect with the circuit isolated. Observe the terminals and version of the supplied DDSU666. Use shielded twisted-pair RS485 cable.

For RS485 runs over 100 m, two 120 Ω resistors are recommended: one between inverter COM 5 and 6, and one between meter pins 24 and 25.

Zero export using a CHINT DDSU meter

Configuration and checks

DDSU666 SETTINGS



Indirizzo



Address 001	Protocol 8n1

INVERTER SETTINGS

Enter Setting →	PCC Select 0001 →	PCC Meter
Set AntiReflux P 0001 →	Reflux Enable →	0.0 kW

1 Set DDSU666 address 001 and protocol 8n1; configure the inverter as illustrated.

2 Restart the meter and inverter after saving the settings.

WARNING Measurement check: inverter off, loads > 1 kW. The power shown on the DDSU666 must match the loads and be negative.

TEST: Start the inverter with sufficient PV power and vary the loads. Check export limitation. A small residual import from the grid is normal.

7 Initial start-up

Start-up sequence with PV power available



DC ON → Check firmware → Safety parameter code → AC ON

Update only if a newer version is available

Close AC only after checking the safety parameter code

Normal

RUN steady green

1. Check earthing, polarity, PV insulation, L/N/PE connections, protective devices and connector engagement.
2. Turn the inverter DC disconnector and any external PV disconnectors ON. Wait for the display to switch on.
3. Compare the installed firmware with that available for the model on the ZCS website. Update only if the available version is newer; do not update to the same or an earlier version.
4. Set and verify the safety parameter code required for the country and grid; then close the AC circuit breaker. Wait for “Normal”.

WARNING If the safety parameter code has not been set or checked, keep AC open and configure it using PV power only.

8 Display and buttons



RUN	FAULT	TWO BUTTONS
Steady: generating Flashing: waiting / checking	Red: fault Read the event code	UP DOWN

UP short Scroll up	→ UP hold Exit	DOWN short Scroll down	→ DOWN hold Enter / confirm

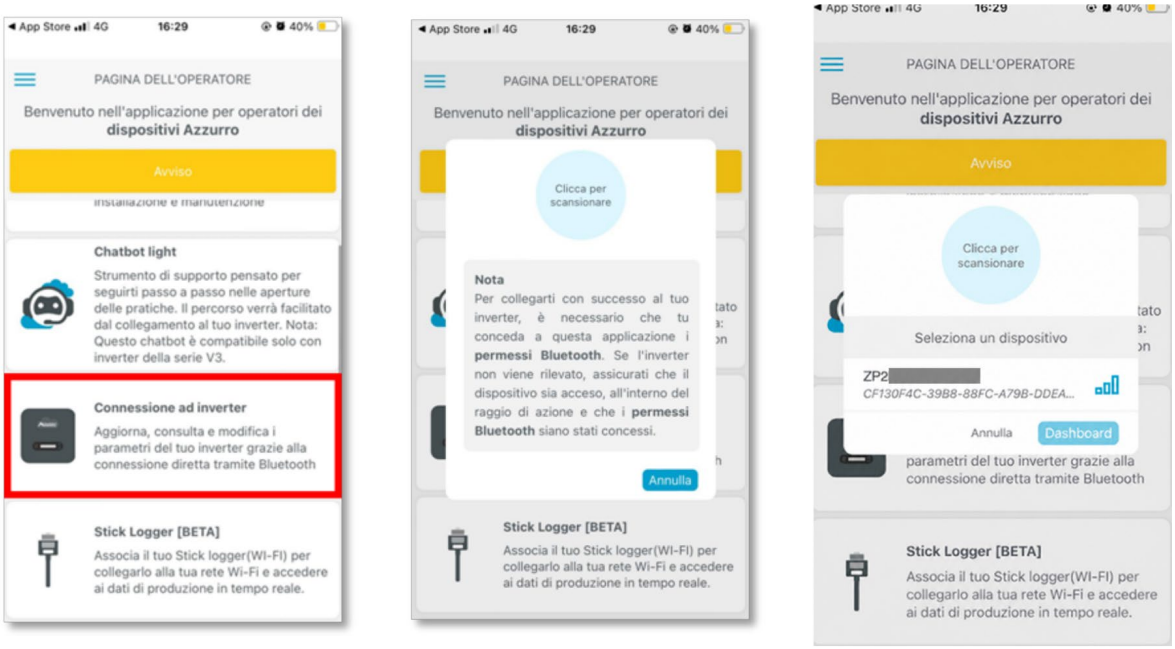
Enter Setting	Event List	SystemInfo

Status	Meaning
Wait / Check	Waiting and preliminary checks
Normal	Feeding power into the grid
Fault / Permanent	Fault: record the code and message

Menu access: press and hold ∨. Menu item names may vary with the firmware version.

9 Firmware update

Via Azzurro Operators and Bluetooth



1 Compare “SystemInfo > Soft Version” with the model firmware available on the ZCS website. Proceed only if the available version is newer than the installed version.

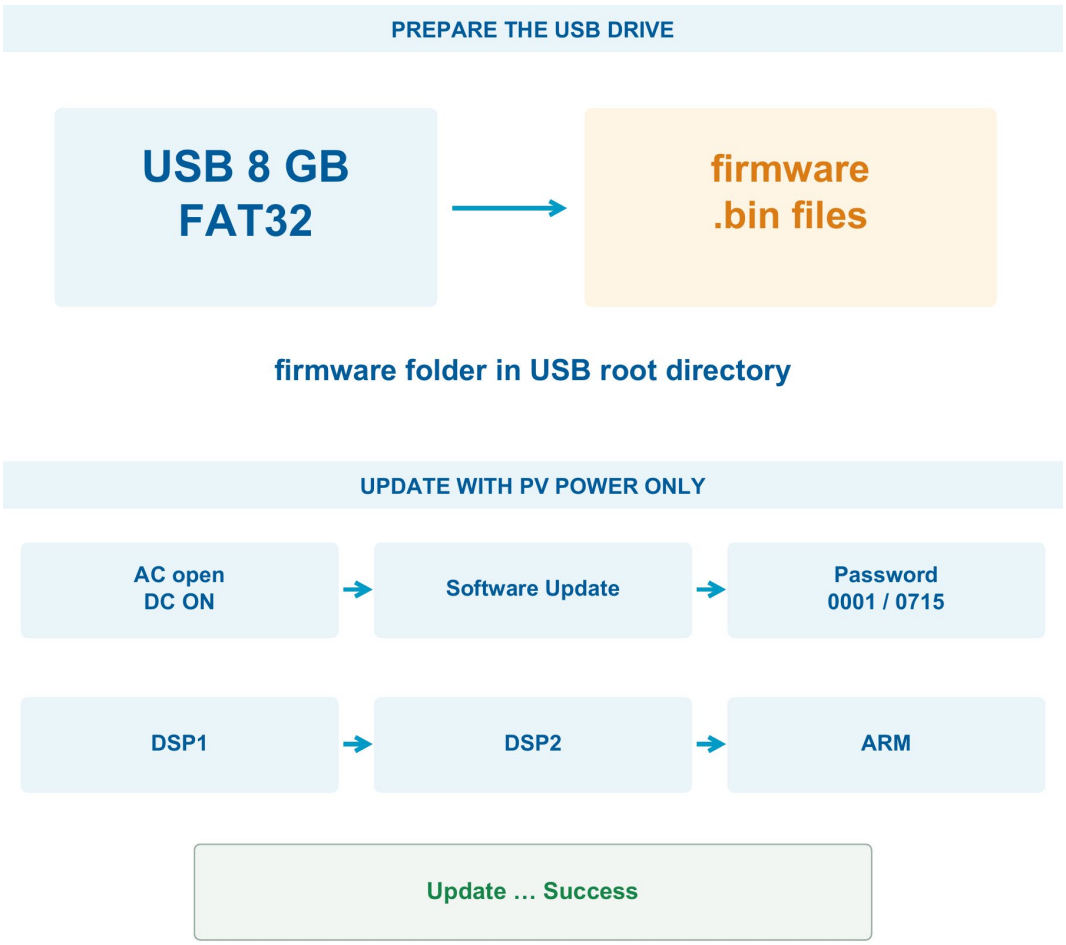
2 Enable Bluetooth and the app permissions. Stay within 1 m of the inverter and select the correct serial number.

3 Open “Firmware e Safety” (Firmware and Safety), start the update and wait for completion.

WARNING If the installed version is the same as or newer than the published version, do not update. Do not downgrade or interrupt power or communication during the update.

Firmware update

USB alternative



1 Only if a newer version is available, download the model package from the ZCS website. Extract the firmware folder containing the .bin files to the USB drive without renaming it.

2 Insert the USB drive with the inverter off. Power from PV with AC open and access “Software Update”.

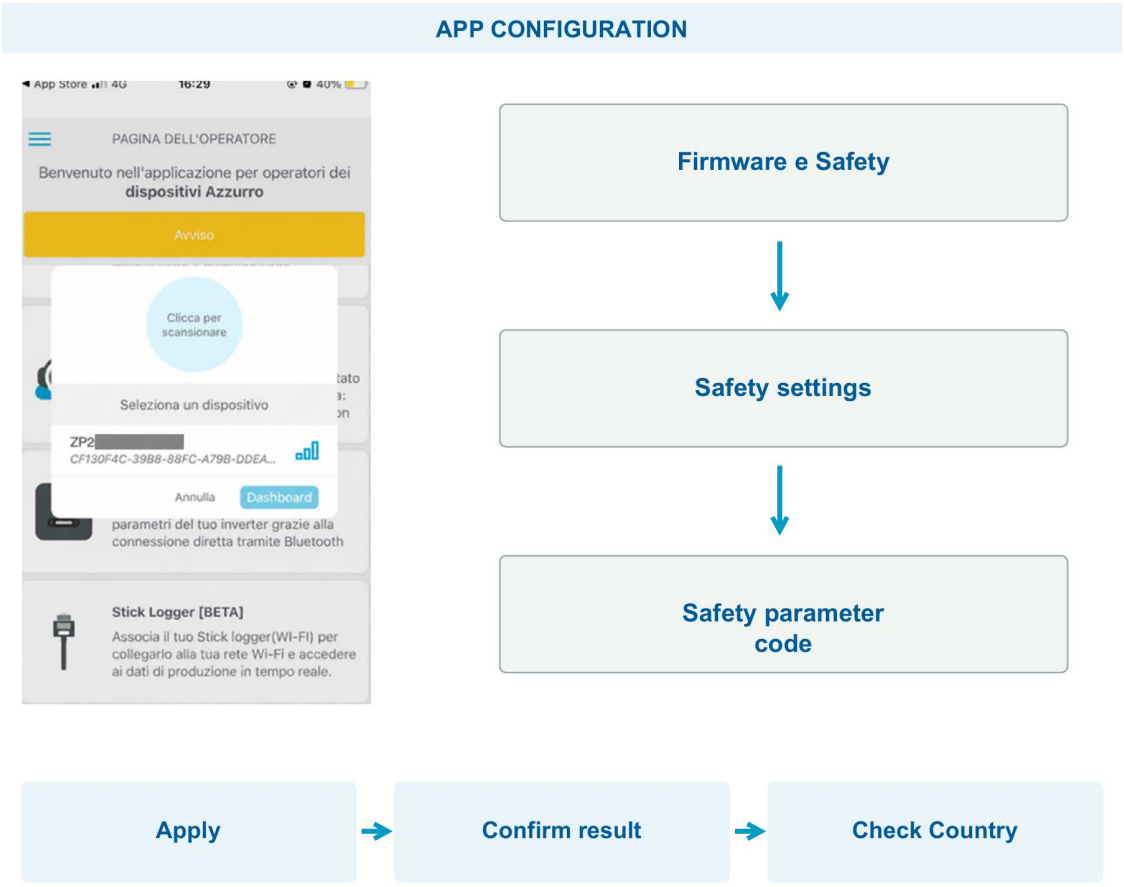
3 Use the password required by the firmware: 0001 or 0715. Wait for successful completion of DSP1, DSP2 and ARM.

4 Open DC, wait for shutdown and at least 5 minutes before accessing the compartment. Remove the USB drive, refit the cover and restart. Check the installed version.

WARNING Do not remove the USB drive during the update. If “Fail” appears, record the message and resolve the fault before commissioning.

10 Safety parameter code setting

Via Azzurro Operators



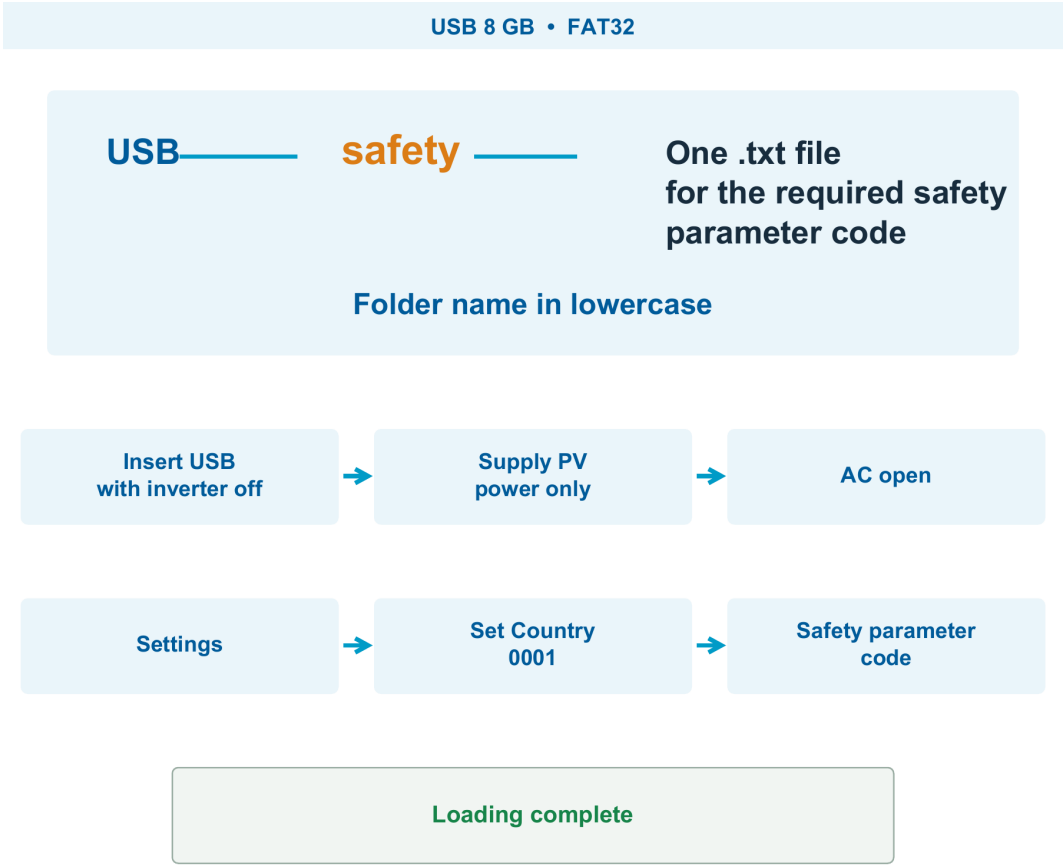
AC OPEN during configuration

1. Before configuration, check the firmware and update only if a newer version is available. Power the inverter from PV, keeping the AC circuit breaker open.
2. Connect via Bluetooth to the correct serial number and open “Firmware e Safety > Configurazioni di sicurezza” (Firmware and Safety > Safety settings).
3. Select the safety parameter code required for the country and grid, apply it and check the result.

WARNING Check “SystemInfo > Country” before connecting AC. The safety parameter code must match the design and grid operator’s requirements.

Safety parameter code setting

USB alternative



1 From the model's Safety Standard package, select the .txt file for the required safety parameter code. Copy it to the safety folder on the USB drive.

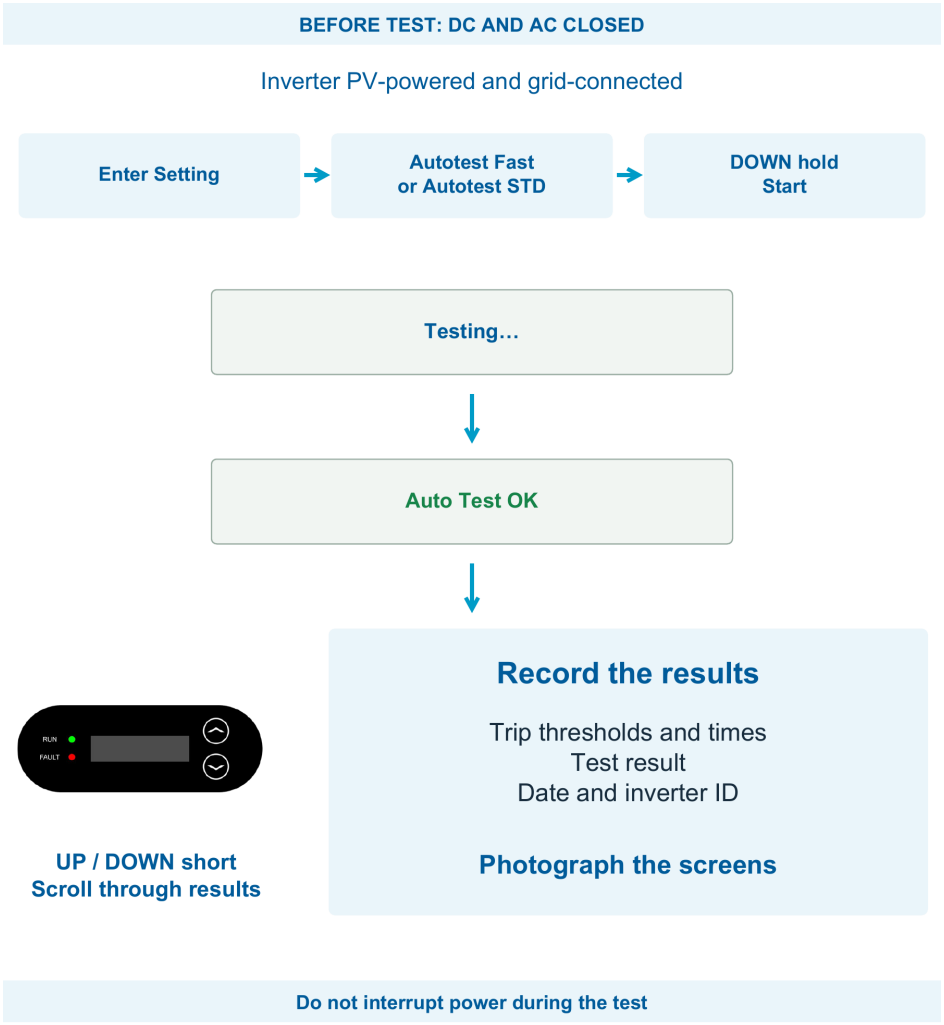
2 Insert the USB drive with the inverter off. Supply PV power only: loading requires AC to be open.

3 Access "Impostazioni > Imposta Paese" (Settings > Set Country), enter 0001, select the safety parameter code and wait for confirmation.

4 Switch off, remove the USB drive safely, refit the cover and restart. Check the safety parameter code set.

WARNING Do not select the safety parameter code based solely on language. If the correct code cannot be identified with certainty, do not close AC.

11 Autotest



1 Check the safety parameter code, that DC and AC switches are closed, PV power is available and the grid is connected. Select “Autotest Fast” or “Autotest STD”.

2 Press and hold ∨ to start. Wait for completion without interrupting DC power or the AC grid connection.

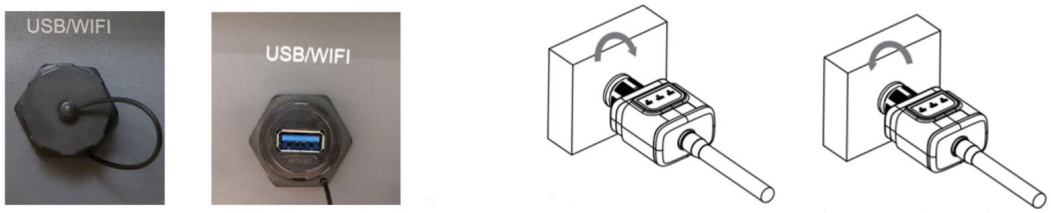
3 Scroll through the results with short presses of ∧ and ∨. Photograph screens with legible values and results and retain them for the grid connection application, as required by the operator. “Auto Test OK” indicates a successful test.

WARNING If the test is unsuccessful, record the results and resolve the cause before handing over the system.

12 Monitoring system

USB data logger and Wi-Fi setup

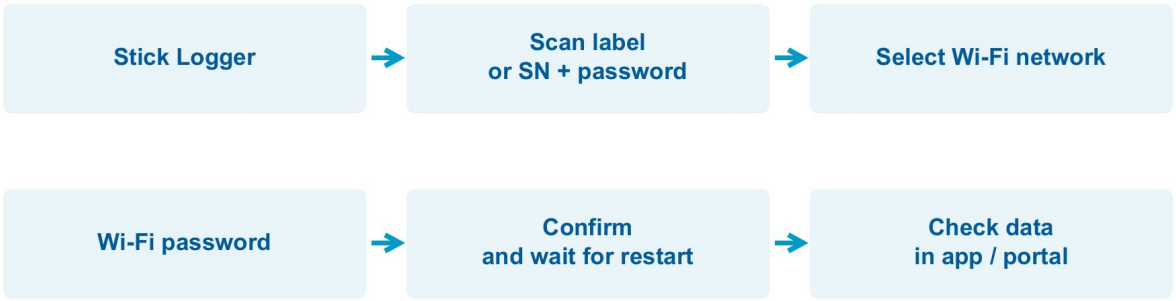
INSTALL WITH INVERTER OFF



1 Remove the cap

2 Insert and secure the logger

WI-FI SETUP WITH AZZURRO OPERATORS



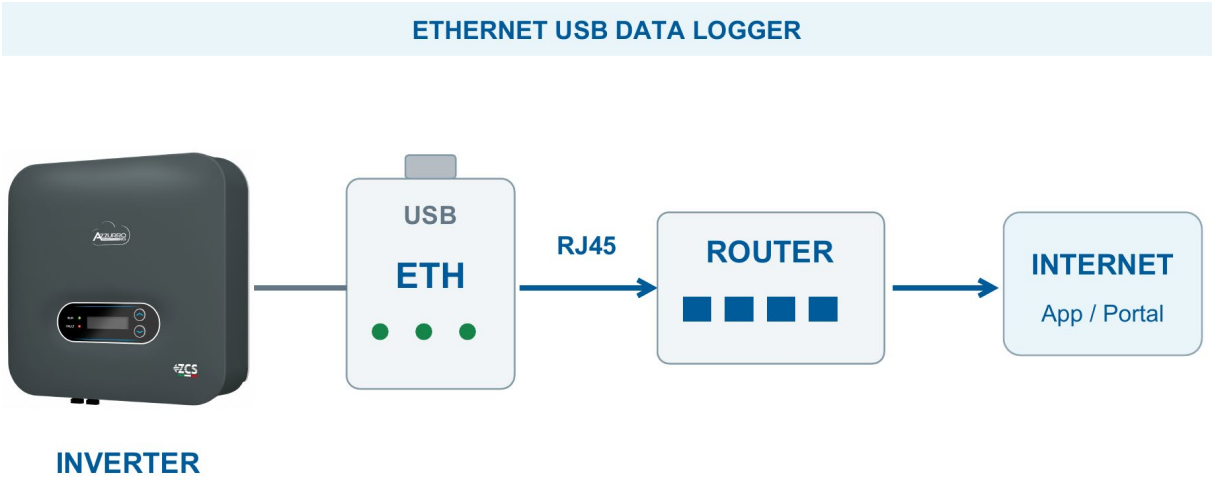
1 With the inverter isolated, insert and secure the compatible data logger. Switch back on and set inverter address 01.

2 Follow the app sequence and use the serial number and password on the data logger label.

Wi-Fi connected	Check
NET and COM steady on; READY flashing	Updated data in Azzurro Systems or Azzurro Portal

Monitoring system

Ethernet USB data logger



1 With the inverter isolated, remove the cap from the dedicated data logger USB port.

2 Pass the shielded Cat. 5 or Cat. 6 network cable through the cable gland; insert RJ45 into the data logger and tighten the locking ring and cable gland.

3 Insert and secure the USB data logger; connect the other end of the cable to a LAN port on a router with Internet access.

4 Switch the inverter back on and set address 01 in “Enter Setting > Set Address”. Wait approximately 2 minutes and check the data in the app or portal.

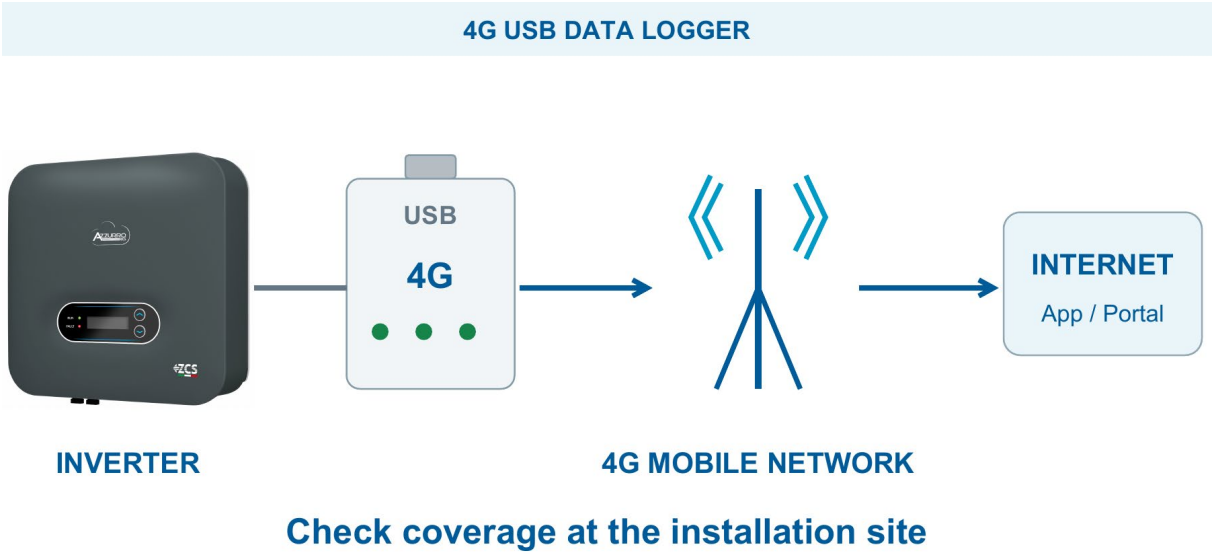
Final LED status	Check
NET and COM steady on; SER flashing	Updated data in Azzurro Systems or Azzurro Portal

The connection starts automatically; Wi-Fi configuration is not required.

If no data arrives, check address 01, data logger insertion, the RJ45 cable and the router’s Internet access.

Monitoring system

4G USB data logger



1 Check mobile network coverage at the installation site.

2 With the inverter isolated, remove the cap from the dedicated data logger USB port. Insert the compatible 4G data logger and tighten the locking ring.

3 Switch the inverter back on and set address 01 in “Enter Setting > Set Address”. Wait for mobile network registration, typically within 3 minutes.

4 Check the LEDs and updated data in Azzurro Systems or Azzurro Portal.

Final LED status	Check
NET flashing; COM and SER steady on	Network registration complete and updated data in app / portal

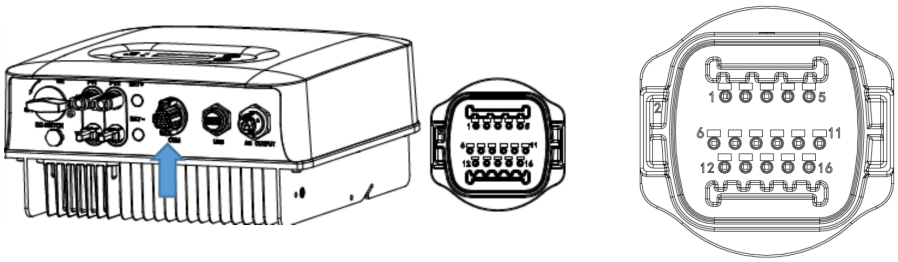
The connection starts automatically; Wi-Fi configuration is not required.

The ZCS 4G data logger with integrated virtual SIM connects to the mobile network. If no data arrives, check address 01, fastening and signal coverage.

Monitoring system

Azzurro HUB and RS485 connection

INVERTER COM PORT



RS485 FOR MONITORING

1 (+)	2 (+)	3 (−)	4 (−)

Single inverter: COM 1 (+) and COM 3 (−)

Multiple inverters: daisy chain

Incoming 1 (+) / 3 (−)	→ Outgoing 2 (+) / 4 (−)	→ Unique addresses 01, 02, 03…

Azzurro HUB acquires inverter data via RS485 and sends it to the monitoring system through an Internet connection.

1 With the inverter isolated, connect COM 1 (+) and COM 3 (−) to the RS485 line. Use shielded twisted-pair cable; earth the shield at one end only.

2 With multiple inverters: incoming on COM 1 (+) and 3 (−), outgoing on 2 (+) and 4 (−). Connect in a daisy chain.

3 In “Enter Setting > Set Address”, assign unique addresses: 01, 02… Do not use 00.

Check that the RS485 icon appears on every inverter display. If absent, check the wiring and communication settings.

WARNING Make connections with the devices isolated. COM pins 5 and 6 are dedicated to the meter, not to the HUB monitoring line.

AZZURRO HUB SIDE

For device power supply, terminals, connections and configuration, consult the Azzurro HUB user manual at www.zcsazzurro.com, under Monitoring systems > Azzurro HUB.